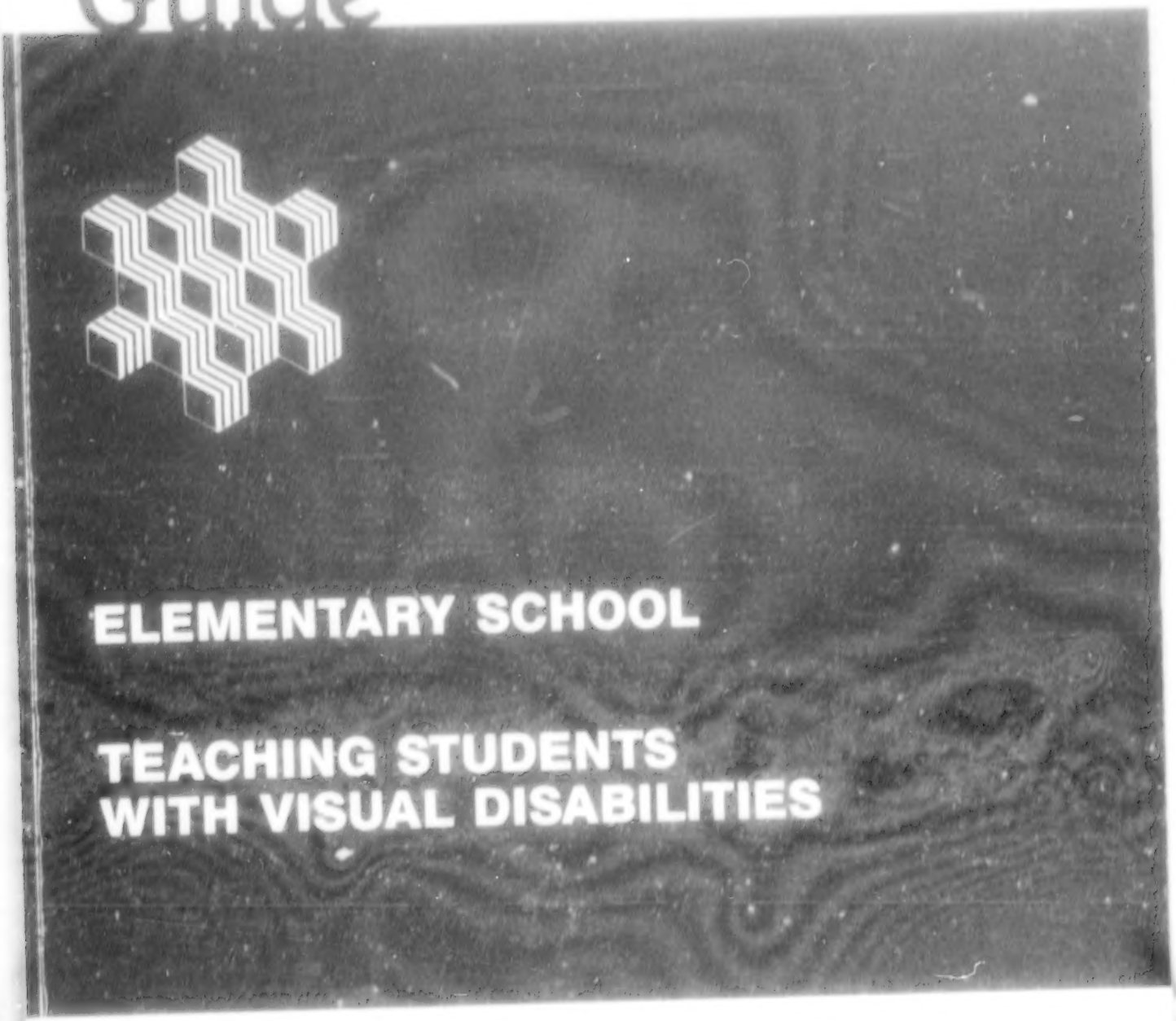
Curriculum Guide



ELEMENTARY SCHOOL

TEACHING STUDENTS WITH VISUAL DISABILITIES

Québec

Niveau(x) d'enseignement: 3 Numéro EDUQ : 0070655
Centre d'intérêt: 260

Teaching students with visual disabilities / Direction générale des programmes, Direction de l'adaptation scolaire et des services complémentaires. -- [Québec] : Ministère de l'éducation, c1988.
74 p. ; 26 cm. -- (Curriculum guide / Ministère de l'éducation du Québec, Direction générale des programmes. Elementary school)

Code: 16-1521-02A ; 0089-460. Bibliogr.: p. 73-74.

ISBN 2-550-14436-8

Vedette(s)-secondaire(s): Québec (Province) Direction de l'adaptation scolaire et des services complémentaires

Descripteur(s): Handicapé visuel * Enfant handicapé * Guide pédagogique * Primaire (Ordre d'enseignement)

Ce guide pédagogique est destiné aux enseignants des classes régulières du primaire. Son but est de fournir aux enseignants un instrument pour les aider à découvrir les méthodes les plus efficaces pour adapter leur enseignement aux élèves qui souffrent d'un handicap visuel. La première partie fournit de l'information sur le phénomène du handicap visuel et sur les élèves qui en souffrent: on parle de leurs caractéristiques physiques, sociales, émotionnelles et cognitives. La deuxième partie traite des stratégies d'intervention. On y suggère certaines attitudes à adopter en classe. La troisième partie, intitulée "évaluation", fournit des renseignements pour l'évaluation des élèves handicapés. La dernière section veut faire prendre conscience aux enseignants qu'ils ne sont pas les seuls qui aient à traiter avec des élèves handicapés visuellement. Ils peuvent trouver de l'aide auprès d'autres membres de l'équipe multidisciplinaire. Une bibliographie, en annexe, fournit une liste de livres pour ceux qui souhaiteraient en connaître davantage sur les handicaps visuels.

Type de document: d

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ELEMENTARY SCHOOL

TEACHING STUDENTS WITH VISUAL DISABILITIES

Direction générale des programmes
Direction de l'adaptation scolaire et des services complémentaires

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Approved by the Comité catholique and the Comité protestant of the Conseil supérieur de l'éducation on April 21, 22, 1983.

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Ministère de l'Éducation, 1988

ISBN 2-550-14436-8

Legal Deposit – Third Quarter 1988
Bibliothèque nationale du Québec

FOREWORD

In **The Schools of Québec: Policy Statement and Plan of Action**, the ministère de l'Éducation outlines the rights of students with learning and adjustment difficulties. These are:

- access to the public school;[1]
- access to quality education;[2]
- access to education in the most normal school environment possible.[3]

Several documents have been, or will be, published to enable individuals to exercise these rights. The following documents deal specifically with visually disabled students:

- **Comment je vois et j'apprends**,[4] intended for the general public;
- curriculum guides (preschool, elementary, and secondary) intended for teachers;
- an organizational guide for administrators.

This guide is the second in a series of three curriculum guides. It is designed for elementary school teachers, and is intended to provide a frame of reference to assist them in their work with visually disabled children.

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[1] Québec, ministère de l'Éducation, "Children with Difficulties in Learning and Adaptation," chapter 5 of **The Schools of Québec: Policy Statement and Plan of Action**, Code 49-1870A, paragraph 5.4.1 (Québec: ministère de l'Éducation, 1979).

[2] "Children with Difficulties," paragraph 5.4.4 and 5.4.5.

[3] "Children with Difficulties," paragraph 5.4.18.

[4] Québec, ministère de l'Éducation, **Comment je vois et j'apprends** (document de sensibilisation), Code 16-1502 (Québec: ministère de l'Éducation, 1980).

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INTRODUCTION

This curriculum guide is intended for teachers of regular classes. It is not meant to replace the programs nor the curriculum guides which accompany them. Rather, **the purpose of this optional document is to provide teachers with an instrument to assist them in finding the most effective methods of adapting their teaching for visually disabled students in elementary school.**

The first section of the guide provides "BACKGROUND INFORMATION" on the phenomenon of visual disability and on students who are visually disabled, as well as information on their physical, social, emotional, and cognitive characteristics.

The second section, which deals with "INTERVENTION STRATEGIES," suggests certain attitudes which should be adopted and maintained in the classroom and during school activities. Finally, the elementary school curriculum and certain complementary activities, and their implications for the visually disabled child, are discussed.

In the third section, entitled "EVALUATION," teachers will find guidelines for evaluating disabled students.

The section on "OTHER EDUCATIONAL PERSONNEL" is aimed at making teachers aware that they are not alone in dealing with visually disabled students. The support of other members of the multidisciplinary team is always available.

The "BIBLIOGRAPHY" provides a list of books for those who wish to have additional information on visual disabilities.

This guide cannot provide solutions to all the difficulties that might arise from the presence of a visually disabled child in a regular class, but it is hoped that the information it provides will assist teachers in integrating such students into regular classes.

1. BACKGROUND INFORMATION

1.1 The Visually Disabled Child

1.2 Development of the Visually Disabled Child

1.2.1 PHYSICAL AND MOTOR DEVELOPMENT
- . Getting About
- . Symptomatic Behaviours

1.2.2 SOCIAL AND EMOTIONAL DEVELOPMENT

1.2.3 COGNITION
- . Cognitive Development
- . Verbalism

1.3 Compensating with Other Senses

- . Residual Vision
- . Touch
- . Hearing
- . Smell
- . Taste

1.4 Means of Communicating and Technical Aids

1.4.1 READING AND WRITING

1.4.2 TECHNICAL AIDS

1.1 The Visually Disabled Child

Visually disabled children are essentially the same as other children. They need love and security in order to develop, and they have their own unique personalities. However, they have to come to terms with impaired vision, a characteristic which sets them apart from other children.

The faculty of sight is used constantly by human beings. This sense enables people to perceive both near and distant objects in detail and with little effort. Using their eyes, individuals can get a view of an object as a whole, permitting them to incorporate a mental image that is already synthesized. The value of the sense of sight lies in the fact that it enables an individual to collect data quickly from the environment and to transform this information into mental images.

Generally speaking, sight is measured in terms of two components, acuity and field of vision. Acuity indicates the degree of visual sensitivity, and field of vision the scope of vision.

The following table lists the main eye disorders which can lead to visual disabilities.

Disorder	Description	Effects on Vision	Other Effects	Possible Corrective Measures
Nystagmus	- lack of motor control resulting in a constant oscillation of the eyes (perceptible to varying degrees in children); - sometimes congenital, it can also be caused by lesions in the centre of the eye.	- reduced visual acuity due to an incapacity to fix one's gaze on an object; - focusing problems	- dizzy spells.	- this condition is not improved by wearing glasses.
Retinitis pigmentosa	- the blood vessels which supply the retina become obstructed and pigments form on the retina.	- decreased night vision; - progressive loss of peripheral vision; - can cause blindness around age 50 but rarely during childhood; - tunnel vision.	- the child might complain but this is more out of discomfort than pain.	- wearing glasses improves visual acuity, but not visual field.

Disorder	Description	Effects on Vision	Other Effects	Possible Corrective Measures
Macular degeneration	- more or less serious degeneration of the macula.	- loss of central vision, only peripheral vision remains; - perception of colour can be affected.		- exercising the eye muscles under proper conditions can help those affected by this disorder.
Glaucoma	- a disorder of the optic nerve characterized by increased pressure within the eyeball; - the transparent fluid inside the front part of the eye does not drain properly.	- difficulty in seeing in the dark; - halo around light sources; - decreased visual field; - if not treated, glaucoma can cause total blindness.	- occasional headaches and pains in the eyes.	- can be treated with medication (most often drops); - in some cases the disease can be arrested through surgery.
Albinism	- absence of pigmentation.	- photophobia (painful sensation produced by light); - bright images.	- often accompanied by myopia or nystagmus; - pain in the eyes; - white hair, very pale skin.	- wearing tinted glasses.
Cataracts	- clouding of the lens of the eye;	- decreased field of vision; - blurred vision.		- wearing glasses; - surgery.
Fibroplasia	- most often affects premature babies.	- total blindness.		- none.

It would be inappropriate to include in the category of the visually disabled all those who have visual problems. The term "**disability**" is used only when a **visual impairment gives rise to difficulties in functioning when the individual interacts with his/her environment.** The following definitions are therefore used throughout this document:

Visually Disabled:

Someone whose sense of sight is deficient to the point of presenting a handicap. This term includes the concepts of "FUNCTIONALLY SIGHTED" and "FUNCTIONALLY BLIND."

FUNCTIONALLY SIGHTED:

Someone who uses residual vision as the principal means of acquiring knowledge and who normally uses the standard graphic system for reading and writing.

FUNCTIONALLY BLIND:

Someone who relies on the sense of touch as the principal means of acquiring knowledge and who normally reads and writes in braille.

Visually disabled children are not necessarily totally blind. Many have residual vision which can be used effectively. Also, it is possible for two individuals with a similar visual disability to have very different ways of functioning. One might rely mostly on residual vision (functionally sighted), and the other on the sense of touch (functionally blind). Visually disabled students are distinguished mainly by a visual impairment which requires them to live and function in ways that are different from those of the majority of children of the same age.

1.2 Development of the Visually Disabled Child

1.2.1 PHYSICAL AND MOTOR DEVELOPMENT

. Getting About

The visual perception of sighted students extends as far as they can see with a simple sweep of the eyes. That of visually disabled students is much more limited; an object which is located only a few feet away from them, for instance, may escape their perception altogether. As a result, they receive less stimulation from their environment, and are therefore less likely to explore and exercise their motor skills.

Teachers should also bear in mind that many motor skills are acquired through imitation. Children imitate the movements of their parents, friends, sports figures on television, and so on. Learning through visual imitation is limited for visually disabled students, and nonexistent for the totally blind. Visually disabled students are, therefore, at a distinct disadvantage compared to their sighted classmates, since they must consciously learn many motor skills.

Most of the motor skill difficulties experienced by visually disabled students arise from their perception of the space around them. As a result, spatial orientation and getting about are constant challenges for them.

Training in "orientation and mobility"[1] enables students to apply techniques which make them as autonomous as possible when they move about in their environment.

Visually disabled students are considered autonomous in terms of mobility if they are able to get about alone safely. However, they usually move less quickly than their sighted peers. Functionally sighted and functionally blind individuals move about in very different ways. The functionally sighted generally behave like their sighted friends, while the functionally blind use hearing and touch to locate objects around them in order to avoid obstacles.

. Symptomatic Behaviours[2]

Symptomatic behaviours are habits, gestures or postures exhibited by many visually disabled individuals, behaviours which others often find unpleasant. They sometimes appear among elementary school students. Students adopt this type of behaviour because they are not sufficiently stimulated by the environment.

Some of these behaviours are self-stimulating:
- pressing the fingers into the eye sockets (apparently, the pressure applied on the socket excites the optical nerve and creates visual sensations);
- playing with the ears;
- twirling locks of hair;
- swaying the torso in a rocking motion;
- rotating the head in a figure eight;
- hopping up and down on the spot;
- shaking the hands and arms.

Other types of symptomatic behaviour seem to arise solely from bad habits that have not been corrected, such as:
- walking with the back excessively arched backwards or forwards;

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[1] The term "orientation and mobility" takes on a particular meaning with respect to visual disability. It refers to all of the movements of visually disabled individuals in places that are either known or unknown to them. To learn how to use the various techniques necessary for getting about (safety, guiding and white-cane techniques), the student must take the training given by specialists in "orientation and mobility."

[2] The term "blindism" is also used for this type of behaviour.

- keeping the head constantly lowered;
- not facing someone they are speaking to;
- standing very close to someone they are speaking to.

Since they cannot perceive the reactions of those around them, visually disabled students do not respond readily to others and are often not very expressive. Their smiles and laughter can sometimes lack subtlety.

Although some of these habits are also exhibited by sighted students, they are generally more persistent and extreme in visually disabled students. Symptomatic behaviours are unpleasant for those around the visually disabled student, and can be detrimental to social interaction.

1.2.2 SOCIAL AND EMOTIONAL DEVELOPMENT

Throughout history, popular culture has developed many stereotypes of the visually disabled. In different societies and eras, a blind person has been considered either a sage or a beggar. Even today, some people think of a blind person as someone who walks with a dog, uses a white cane, is a pianist or piano tuner, or someone who cannot work, or begs for money.

Even though children have fewer prejudices than adults with regard to the visually disabled, they are no more tolerant. If the visually disabled children are clumsy in certain activities, their peers tend to avoid them. Consequently, they tend to prefer contact with adults, other students with the same disability, or even isolation.

For many visually disabled children, kindergarten provides an opportunity to establish their first contacts with other children their age. These limited contacts enable visually disabled students to develop social skills, and they generally succeed in establishing good relationships with others. Nevertheless, they remain reserved in their social interactions. It should not come as a surprise, therefore, that they prefer to socialize with the same people most of the time. They are usually hesitant to take the first step and wait for others to take an interest in them.

Visually disabled students become increasingly aware of their limitations through their contacts with sighted students. As a result, they may feel frustrations that are difficult to deal with. They are more likely to experience failure than sighted students. This sometimes leads them to become withdrawn and to deny their disability.

They may also start to feel incompetent and become passive. These feelings may make them adopt demanding behaviour and the attitude that people owe them something because of their disability. They may also become aggressive and refuse to interact with others if their desires are not met.

If visually disabled students are autonomous and if their peers accept them as they are, they will become self-confident and develop their potential. They will accept their disability better, and act assertively when people try to overprotect them. As they grow older, they will have more and more exposure to the demands of society, and if they find doors closed to them, they may tend to escape into daydreams.

Since visually disabled children may be facing the reality of their condition for the first time in elementary school, they have a tremendous need for support and encouragement during this period.

1.2.3 COGNITION

. Cognitive Development

Many theories have been put forward in answer to the question of whether or not visually disabled individuals' mental image of the world and of objects is the same as that of sighted individuals. Some theories maintain that their images are the same; others suggest that they are different. Many studies, however, indicate that vision plays a decisive role in cognitive development. There may be significant differences in cognitive development between visually disabled and sighted students, and between functionally sighted and functionally blind students.

The sighted student forms mental images mainly on the basis of visual perceptions. The eye synthesizes information on the object and a mental image is formed quickly. With the visually disabled individual, the mental image is formed less quickly. Only the time factor differentiates the functionally sighted student from the sighted student in this respect. For the functionally blind student, touch and hearing do not always convey an accurate image of a particular object, even though these senses provide significant clues.

In order to form an adequate mental image of the objects in the environment, that is, an accurate idea of the physical surroundings, and of the distances and relationships between things, visually disabled students must have frequent opportunities to explore and handle objects. The functionally blind must learn how to use their bodies to extend the range of their perception. They need mobility to expand their world and to acquire knowledge of their surroundings.

Visually disabled students also need special assistance in order to supplement their knowledge. This assistance can take the form of giving them access to different objects and situations in their environment. It can also take the form of verbal explanations while they are exploring and handling things. **The verbal description of objects and situations is one of the main methods of acquiring information for visually disabled students.**

Visually disabled elementary school students may develop more slowly than sighted students, since they have not yet mastered the means by which they can get to know their environment (maximum use of the senses, mobility, and so on). Differences in rates of development may vary. Functionally sighted students, for instance, may be more advanced in their development than functionally blind students. Their past experience using their other senses, and the influence of adults who have worked with them will affect the rates of development of visually disabled students.

Slower development seems to persist in students who are totally blind, even at the elementary school level. Clearly, this slower development is due to the way they function and not their intellectual capacity. In a study entitled **Privation sensorielle et intelligence**, Yvette Hatwell[1] traces the differences between those who are blind from birth and the sighted. She discovered that blind people do not do very well on infralogical tests and language-based logical tests. Although a more or less significant difference in cognitive development exists between the visually disabled child and the sighted child, this difference has practically disappeared by the end of elementary school, when the children have reached the age of 12 or 13.

Finally, it is important for the teacher to keep in mind that the development of the visually disabled person goes through the same stages as that of the sighted person. The development of visually disabled students may extend over a longer period of time, however, and require that the teacher intervene more often.

. Verbalism

Some visually disabled students may have a tendency to VERBALISM. "Verbalism" is the misuse of words in the sense that the words used do not accurately express the reality that the visually disabled individual wishes to describe. An example of verbalism would be a blind student's saying, "The

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[1] Yvette Hatwell, **Privation sensorielle et intelligence** (Paris: Presses universitaires de France, 1966).

chicken is standing on its hind legs." The sentence can be understood by all, but the use of the adjective "hind" indicates that the student either thinks a chicken has four legs, or is using the word without really knowing what it means.

Verbalism is still common among visually disabled children in elementary school. At this age they have not yet come into contact with many things in their environment, and the verbal descriptions they have received have not always been very accurate. As a result, the mental images they have of objects may not be altogether accurate.

It is not always easy to detect verbalism; certain clues may help the teacher determine its presence. For instance, a child who uses words that are beyond his/her years may be engaging in verbalism. The same is true of a child who tends to describe situations that are divorced from reality.

The tendency to verbalism decreases in visually disabled children as they grow older and have a variety of different experiences. Generally speaking, by the end of elementary school, verbalism occurs only rarely.

1.3 Compensating with Other Senses

Popular belief has it that the visually disabled have a sixth sense. However, visual impairment does not lead to automatic development of the other senses, much less to the replacement of the sense of sight by another sense. What is erroneously called the sixth sense is in fact the visually disabled person's well-developed ability to compensate for loss of sight by increasing the efficiency of all his/her other senses. **Maximum use of the other senses for purposes of gathering information about the environment** constitutes what is called **compensation by the other senses.** The information gathered must be meaningful, that is, it must be useful to the child and closely approximate information that a normal sense of sight would provide.

The quality of compensation by the other senses is related, on one hand, to the availability of information and, on the other, to the interpretation it is given. For visually disabled individuals, it is not only a question of seeing, touching, hearing, smelling, and tasting, but also of looking at, feeling, listening to, breathing in, and savouring.

While in elementary school, visually disabled students reinforce the compensatory role played by their other senses. At the beginning of elementary school, most of them still have not acquired the habit of

compensating systemically. Although they may use all their senses to gather meaningful information, some will be missed. With time, these students will learn more and more from their experiences.

Compensation provided by the other senses to counterbalance visual impairment does not occur automatically. Visually disabled children have to develop the acuity of their other senses and learn how to interpret the information that they gather.

. Residual Vision

As mentioned before, not all visually disabled individuals live in total darkness. A great many of them have residual vision or are able to distinguish between brightness and darkness. It is essential that residual vision be used, however minimal it may be. With their residual vision, students are often able to perceive significant clues which can be very useful in the learning process.

The following are a few observations that can be made using **residual vision** and some conclusions that might be drawn:

OBSERVATIONS	WHAT CAN BE DEDUCED
Light . daylight or electric light . strong, subdued or diffused light . direct or reflected light	Light enables the children to determine where they are and to locate objects around them. Example: Students notice that often daylight is sufficient to light the classroom, while the hallway is usually lit by electric lights. They may deduce, therefore that there are more windows in the classroom than in the hallway.
Play of shadows and silhouettes	Shadows can indicate to the children the shape, size and movement of various objects. Shadows can help students identify obstacles in their path when they are moving about. Example: Students can recognize teachers by their silhouettes.
Colours . shades (light/dark) . contrasts	Colours can help the children a great deal in locating known objects, especially when the objects are too far away for many details to be seen. Contrasting colours also simplify the task of locating objects. Example: Students can recognize their playmates in the school yard by the colour of their clothing.

It is important, especially from a social point of view, that visually disabled students know the colour of different objects, even when they cannot perceive colours or are completely blind. They should know, for instance, that leaves on the trees are usually green, that sweaters can be blue, and that the sun is yellow, but may turn red when it sets.

. Touch

Touch is the sense most used by visually disabled children to compensate for their impairment. For the functionally sighted, the sense of touch complements residual vision; for the functionally blind, touch is the most important of all the senses. The quantity and quality of knowledge that will be acquired by visually disabled students depends mainly on their use of touch.

Knowledge of very large or very small objects can be acquired through touch, but visually disabled students must use this sense with great skill and be capable of great efforts of imagination and synthesis. When using the sense of sight to learn about an object, a person first considers the object in its totality and then identifies its component parts. The process is reversed when a person uses the sense of touch to find out about an object: first the component parts are considered, then a comprehensive mental "picture" of the object is formed. It might be said that sight is the synthetic sense and touch is the analytic sense.

The range of the sense of touch is limited to the area which the arms can reach. This space is much smaller than the field of vision of the sighted. Furthermore, some objects that are easily seen by normal eyes cannot, in practical terms, be perceived through touch: dangerous things, such as fire, for example, or objects too far away to be touched, such as clouds and the moon.

In order to form the clearest possible concepts or mental "pictures", students must handle a variety of objects a number of times. Out of these numerous analyses, synthesis will emerge.

To efficiently gather information transmitted through touch, students should follow certain guidelines. Since the hand is the part of the body that is usually used for touching, students should:

- Use the inside part of their fingertips since these are the most sensitive areas of the hand;

- Apply appropriate pressure to the objects which they handle: perception is reduced when strong pressure is applied, while a light touch increases sensation;
- Examine objects slowly. More accurate sensations are produced when the skin glides slowly over the object;
- Use both hands. In order to facilitate perception, it is essential that the movements of both hands be coordinated. The role of one hand is simply to maintain the object in place and act as a reference point. The other hand explores the surfaces of the object methodically using the first hand as a reference point;
- Keep their hands clean and dry and avoid injuries, cuts, and chapping in order to maintain maximum sensitivity.

All parts of the body are sensitive to touch, but in varying degrees. The lips and tongue, for instance, are particularly sensitive and can help to detect details which the fingers cannot feel. Lastly, students can use indirect touch which involves the use of a specific medium as an extension of their sense of touch, for example, a cane or their shoes. Through their shoes, the visually disabled can gather information on the nature of the ground or floor under their feet, and this may help them to move about more easily and safely.

The following are a few observations that can be made by using the sense of touch and some conclusions that may be drawn:

OBSERVATIONS	WHAT CAN BE DEDUCED
Temperature observations: . hot . warm . cold	Variations in temperature can indicate to visually disabled students where they are in relation to a place they know and also give them more precise information about certain objects. Example: Students could tell that the classroom is very sunny by touching their hot desktops.
Weight observations: . heavy . light	Variations in weight help the students to differentiate objects that have the same texture. These variations in weight are also excellent indicators of whether or not a container has been emptied. Other conclusions may then be drawn.

OBSERVATIONS	WHAT CAN BE DEDUCED
Observations related to size and shape: . straight, curved . long, short . flat, thick . circular, spherical . square, cubical . triangular, prismatic, etc.	Objects that vary in shape are the most useful ones for the sense of touch, since data related to shape are used by students to create mental images that are very close to reality. The size and shape of objects are particularly important for recognizing and locating objects in the environment. Example: Students can recognize a certain book by its thickness and size.
Observations related to materials: . wood . metal . plastic . cardboard . paper . cloth, etc.	Knowing what an object is made of enables students to identify it more easily.
Observations related to texture: . smooth/rough . hard/soft	The texture of cloth plays a definite role in the identification and location of objects. Example: Students know which piece of clothing they are taking out of their lockers by the texture of the cloth.

. Hearing

Through the sense of hearing, the visually disabled can locate sound sources and recognize objects from a distance. Sound sources (a person speaking, a dog barking, the sound of the television) enable them not only to perceive that a person, animal or object is present, but also to identify them. Sound sources also help the visually disabled to get their bearings, and find out how the space around them is organized. Finally, the visually disabled rely on their sense of hearing for moving from one place to another.

In order for the sense of hearing to compensate efficiently for visual impairment, it is not sufficient for visually disabled students to listen to sounds. They must also learn to distinguish between sounds. To ensure maximum use of the sense of hearing, teachers should take a rational approach. They should not, for instance, remain silent for long periods of time. Too many sounds at the same time can also prove to be an obstacle to communication and result in confusion.

The following are a few observations that can be made by using the sense of hearing and some conclusions that might be drawn:

OBSERVATIONS	WHAT CAN BE DEDUCED
Observations related to the tone quality of sound: . low-pitched or high-pitched . muffled or shrill	Variations in tone are excellent indicators that enable students to identify people, animals, and objects in their environment. Example: Students may recognize people in the room by the tone of their voices.
Observations related to the volume of sound: . loud or soft	Sound volume plays a particularly important part in defining distances and trajectories. Example: Sound volume indicates to students whether they are nearing or moving away from a place or an object, whether an object is moving parallel or perpendicularly to them, and so on.
Observations related to the rhythm of sounds: . regular or irregular	The rhythm of sounds that people produce enables the visually disabled to judge their mood. The rhythm and volume of voices are indicators of people's emotions. Example: Students will know when a friend is angry by the tone of voice and the speed of delivery.

The role of hearing in oral communication is very importance to visually disabled students. Information of a verbal nature, especially descriptions, enables them to form realistic mental images. The general picture they have of things becomes more and more detailed and refined as they listen to descriptions. They may know, for example, that a clown is a funny character, but a description of the scene that is taking place, the colours of the clown's costume, and so on, adds to their mental image.

. Smell

In general, human beings use their sense of smell very little. For visually disabled students, however, this sense plays an important compensatory role, especially for recognition and identification. Through the sense of smell, the visually disabled can recognize people (perfume, cigarettes), animals (dog, skunk), things (flowers, spices), and places (kitchen smells).

OBSERVATIONS	WHAT CAN BE DEDUCED
Different smells: . fragrant or repugnant . strong or delicate . pungent or sweet	Various smells enables visually disabled students to identify people, animals, and objects around them, as well as to establish their location. Example: Their sense of smell may indicate to them whether they are nearing the bathroom or the kitchen. They might recognize a particular teacher by her perfume.

. Taste

The sense of taste plays the least important role in compensating for the sense of sight. Most of the time, it is used only to recognize and identify food and drink, but it is nonetheless a very useful sense. Visually disabled students can develop their sense of taste by learning to recognize various flavours.

The following are some observations that can be made by the sense of taste and conclusions that might be drawn:

OBSERVATIONS	WHAT CAN BE DEDUCED
Different flavours: . mild or hot . sweet or sour	Different foods can be recognized by their flavours. Certain dishes can only be identified by tasting them which explains why this sense has not lost its usefulness. Example: Students may identify the foods on their plates by tasting each item.

1.4 Means of Communicating and Technical Aids

The way in which visually disabled students function requires them to use means of communication that are different from those used by sighted students. In addition to using their other senses to the fullest, they must rely on special techniques and devices in order to communicate with those around them.

Functionally sighted students need relatively few technical aids. The ones they do use are generally easy to handle and require only a short training period. These students may, therefore, benefit from the use of these aids from the beginning of elementary school. Generally, these devices belong in the category of optical aids such as corrective eyeglasses, magnifying glasses, telescopes, and closed-circuit television.

Students who are functionally blind will usually begin learning to use most special devices for the first time in elementary school. These devices are designed to assist the students in the learning process. A resource person is responsible for showing these students how to use the specialized technical aids which they need. The following explanations concerning special aids are therefore brief. Should more information be required, however, it can be obtained by reading publications on the subject.

1.4.1 READING AND WRITING

For written communication, the functionally sighted employ the standard graphic system while the functionally blind use the braille system. Some use both systems depending on circumstances and the type of work they are doing.

- Print: The term **print** is used here as a synonym for the standard graphic system, including numerals.
  - . Reading: Functionally sighted students often must hold the paper very close to their eyes in order to read. This limits the number of letters within their field of vision. As a result, they cannot absorb groups of words, and are forced to move their heads just to read one line. For many of them, four or five syllables is the most they can perceive at one time. Inevitably, their reading speed is reduced. Reading is even more difficult when a text is dense and contains different kinds of print. Functionally sighted students sometimes hesitate when words in italics suddenly appear in a text.
  - . Writing: As with reading, functionally sighted students often must have their eyes close to the paper when they write. Many develop the habit of writing without checking each letter. Letters are often poorly formed making them difficult to read.

- Braille: When **print** cannot be used for written communication, the visually disabled must use **braille**.

  Braille is a tactile system of reading and writing. Each sign consists of an arrangement of raised dots (maximum 6) in an area measuring 2.5 x 5 mm. Sixty-three signs represent letters, punctuation, numbers, mathematical symbols, and musical notes. Braille can be contracted to speed up reading and writing. The word "but," for example, can be represented by "b" and the word "friend" by "fr". The standard contraction rules for braille should, of course, be followed.
  - . Reading: Braille is read with the fingers. The reader decodes one sign at a time which means a word may only be read by proceeding from one letter to the next. As a result, reading is slowed considerably. The recommended technique for reading braille requires the use of both hands: the right index finger reads the letters on the line while the left index locates the beginning of the next line.
  - . Writing: Braille requires the use of special writing devices: a slate and stylus or a brailler.

. Slate and stylus: The paper is held in place on a slate divided into rectangles. Each rectangle is the size of a braille letter. With the stylus, the writer produces the necessary raised dots to represent the desired letter. With this device, braille writing is done from right to left; when the paper is turned over, the raised dots of the written text can then be read from left to right.

. Brailler: This machine offers major advantages over the slate and stylus. It is enough to know the correct fingering to use the machine efficiently. The text can be written rapidly and immediately checked for accuracy. Using the braille contraction system and a brailler, a blind person can write as fast as a sighted person using conventional methods. In the first cycle of elementary school, visually disabled students learn to master the reading and writing of the long form of braille. During the second cycle, they learn to use its contracted form.

1.4.2 TECHNICAL AIDS

There are many special devices available for visually disabled students. Some of these devices are more sophisticated than others; students should use only the ones which they need to function efficiently. These aids allow visually disabled students to maintain communication with those around them. The following is a brief list of those most frequently used in schools.

- Devices used for reading:
  . Visual aids (magnifying glass, eyeglasses, telescopes);
  . Closed-circuit TV: magnifies written or printed matter which students then read from the television screen;
  . Optacon: enables the functionally blind to read print;
  . Variable-speed tape recorder: used for listening to lessons recorded on cassettes. The recording can be played back at faster than normal speed without much distortion.

- Devices used for writing:
  . Slate and stylus;
  . Brailler;
  . Standard typewriter;
  . Darkly-lined writing paper.

- Devices used for getting about:
  . White cane;
  . Telescope.

- Devices used to teach certain subjects:
  . Mathematics: Taylor slate and prisms, abacus, talking calculator, braille calculator, braille compass, raised-line drawing kit and stylus;
  . Geography: relief maps, scale models.

Visually disabled students, whether they are functionally sighted or functionally blind, may need to use one or more of these technical aids or special devices. These aids cannot solve every communication problem, but they help alleviate many problems.

2. INTERVENTION STRATEGIES

2.1 A Positive Attitude

2.2 Teaching Methods
- . Adjust to the Visually Disabled Child's Ways of Functioning
- . Make Learning Activities Concrete
- . Increase Stimuli
- . Foster Inductive Learning
- . Encourage Independent Behaviour

2.3 Organizing Activities
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2.5 Necessary Interventions
- . Eliminating Symptomatic Behaviours
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2.7 Activities
- 2.7.1 COMPLEMENTARY ACTIVITIES
  - . Arriving and Leaving
  - . Dressing and Undressing
  - . Recess
  - . School Outings
  - . Integration

2.7.2 PROGRAM-RELATED ACTIVITIES

- English Language Arts
- French
- Mathematics
- Natural Science
- Social Studies
- Physical Education
- Art
- Personal and Social Education
- Moral and Religious Instruction/Education

2.1 A Positive Attitude

The teacher's attitude toward visually disabled students determines the quality of his/her interactions with them and colours his/her entire instructional approach. It is therefore very important for the teacher to adopt an attitude that is beneficial to the students' learning processes.

The teacher's attitude should be one of acceptance of visually disabled students. They should be considered as children who have the same basic needs as other children and who belong in the group. Teachers should take the particular circumstances of these students into account and treat them as they would any other student with potential to be developed. To realize their potential, visually disabled students must repeat experiences many times. For this reason, it generally takes them more time to achieve the same results as their sighted classmates.

To put this positive attitude into practice, the teacher should:

- Treat visually disabled children exactly like the other children by requiring them to perform according to their abilities;
- Have them participate in all group activities by giving them appropriate roles; they should not be isolated unless it is absolutely necessary;
- Let them choose means which are suitable for them, accept that they may require more time than others to finish a task, and never leave them with nothing to do.

2.2 Teaching Methods

By choosing an instructional approach based on the students' abilities (e.g. permit them to perform alternative tasks according to their way of functioning), teachers encourage them to realize their potential. The following principles, based on the work of Berthold Lowenfeld, should be kept in mind by teachers when they work with visually disabled students:

- Adjust to the visually disabled child's ways of functioning;
- Make learning activities concrete;
- Increase stimuli;
- Foster inductive learning;
- Encourage independent behaviour.

. Adjust to the Visually Disabled Child's Ways of Functioning

It is important at this point to remember two facts regarding visual disability: first, many visually disabled children have residual vision, and second, two individuals with the same degree of visual disability may adopt

different ways of functioning. The visually disabled use their residual vision and other senses in very personal ways. For example, there are children who, depending on the situation, sometimes use their sense of touch and sometimes use their residual vision as their principal means of acquiring knowledge.

Teachers should be constantly aware of the students' ways of functioning (i.e. functionally sighted or functionally blind) in order to choose the most appropriate instructional approach. How students function can provide indications of their past learning achievements and what strategies might be used to help these children acquire further knowledge and skills. If young visually disabled students are required to identify a certain piece of material, for instance, their attention may be directed to the texture (children who use their sense of touch) or to the contrasting colours (children who use their residual vision). To understand a student's way of functioning, the teacher should know the degree of visual disability, the age at which the disability first appeared, and the cause of the disability.

The degree of visual disability indicates to the teacher whether the child has residual vision, and if so, to what degree it can be used. From how far away can the child recognize an object? Can he/she perceive shadows? Up to what distance? Is he/she photophobic? The answer to these and other related questions indicate to the teacher just how much of the student's vision may be used during the learning process.

The age at which the disability first appeared indicates to the teacher whether visual memories (colours, forms) can be used when he/she works with the students.[1]

The cause of visual disability can be of help in determining the child's strengths and limitations. Is the disability hereditary or congenital? Is it the result of illness or an accident? Did the child have to remain in hospital for a long time? The answers to these questions can provide information that may be useful in understanding, for example, fatigue, headaches, and watering of the eyes.

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[1] Although no scientific proof exists, it is widely held that individuals who lose their sight before the age of five also lose the memory of what they have seen, as they grow older. The mental image gradually fades away.

Teachers need to understand the impact that visual disability has on the students' functioning. However, they should guard against generalizations, since each student has his/her own way of functioning which should be taken into account when planning the instructional approach.

. Make Learning Activities Concrete

Sighted children can take a quick look at their surroundings, and establish contact rapidly and accurately with their environment. Visually disabled children, making use of all their senses to observe the environment, must rely to a greater degree upon their imaginations. The mental images they form may not conform to reality.

For example, a picture may be described for the students by saying, "Spot is running fast." As they look at the scene, the sighted students are in contact with reality. Visually disabled students, however, cannot see the scene at all, or miss certain details of it. They must therefore call upon their imagination, and the mental image of the scene thus formed probably will not fully correspond to what is actually in the picture.

If visually disabled students are to obtain accurate information and not be confused in their thinking, they should be put into contact with concrete objects. Teachers should try to make learning experiences significant for such students by referring to things that are concrete for them. This can be accomplished in two ways:

- increase the number of opportunities students are given to handle meaningful objects, that is, objects that correspond to their way of functioning;
- build on the students' previously acquired knowledge when showing them new objects or when introducing them to new concepts.

The following methods are useful to provide information about objects that are not easily accessible, or to help students conceptualize abstract ideas. By using such methods, teachers can help children increase their knowledge of common objects and related concepts. For example:

- a ship: huge;
- a fly: tiny;
- a flower: fragile;
- a ferocious animal: dangerous;
- clouds: out of reach.

Three-dimensional models are useful since they provide the opportunities for students to use both their sense of touch and their residual vision. For example:

- If the teacher wants to introduce students to the concept "church", he/she shows them a scale model of a church. Students touch the main parts of the church (steeple, bells, portal, stained-glass windows) and discover how they are arranged in relation to each other, thus forming a mental image of the church. To complete the image and have it correspond as much as possible to reality, the teacher can take the children to a church. By having them visit its different parts and listen to the echoes (choir, organ), the teacher makes it possible for them to personally experience the real dimensions of a church. A verbal description given simultaneously makes the mental image that much more accurate.
- If the teacher wants to give the students an idea of the height of the ceiling of the church, telling them that it is about 50 feet from the floor or that it is very high may mean nothing to them. One way to make this height more concrete would be to tell them that a certain number of children their size would be needed to reach the ceiling if they stood on one another's shoulders.

Verbal descriptions are very useful for making learning more concrete. However, this is only one of a number of strategies the teacher can use.

. Increase Stimuli

Visually disabled students receive very few, if any, visual stimuli from the environment. Even when they manage to compensate adequately for their disability by using their other senses, they invariably receive fewer stimuli than sighted students.

When working with visually disabled students, teachers should provide stimuli which will motivate the children to find out more about their environment. For example, sounds are a good source of stimulation. The best way, however, is to place them in meaningful situations which provide them with the opportunity to practice functioning. Teachers should give students every opportunity to move about and to handle objects. They can take the students to the object (e.g. go for a ride on a train to learn about a train), or they can bring the object to the students (e.g. bring a chicken into the classroom so they can learn about this bird).

. Foster Inductive Learning[1]

In their contacts with reality, visually disabled students are at a disadvantage compared with their sighted classmates. Though they gather a great deal of information by compensating with their other senses, the only way they can form a mental image of an object or a situation is by piecing together the parts that form the whole. When sighted students enter a room for the first time, for instance, they initially perceive the whole (size, layout), and then they notice the details (decoration, style, and so on). For visually disabled students the reverse occurs: they begin by perceiving the various parts (desk, chair, cupboard) which they then piece together to form the whole (classroom, office, kitchen). Using induction to form realistic mental images requires a great deal of complex thinking.

Teachers should introduce young visually disabled children to the induction method gradually. They should begin by putting students in contact with just one part of the whole, then a second part, and so on. Next, students should be encouraged to establish relationships between the different parts. To facilitate the students' task of synthesizing information, the same object should be used as a reference point throughout the exercise. For example, students trying to form a realistic mental image of the classroom may use the door as the reference point. The teacher would begin by explaining the location of the cupboards, work areas, tables, and so on in relation to the door. The students would then check the location of the various parts of the whole themselves by actually moving from the door to the cupboard, from the door to a work area, and so on.

. Encourage Independent Behaviour

Visually disabled students do not usually tend to experiment on their own and often they have to be motivated to explore their surroundings. Sighted students can learn by visual imitation, but visually disabled students with little or no residual vision are not able to do so. Furthermore, the visually disabled students' way of functioning forces them to do things more slowly. For these students to correctly integrate new learning, however, it is essential that they be left to work on their own with a minimum of assistance.

The principle of encouraging independent behaviour can be applied by helping the children take an active part in their own life experiences. Teachers

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[1] The degree of residual vision affects the importance of induction. However, while induction is most important for the functionally blind, it can also be a very important reinforcement for the functionally sighted.

should encourage them to use all the means at their disposal to participate in an autonomous fashion in the various classroom and extra-curricular activities.

2.3 Organizing Activities

Visually disabled students are usually able to participate in all school activities. Some activities, however, have to be adapted to the students' way of functioning. Changes may be required to various aspects of the activities: objectives, performance, or required materials.

All activities, whether they are carried out in groups or individually, should be performed in accordance with the five principles mentioned in Section 2.2. For activities to be successful, they should include the following four stages:

- planning;
- establishing the learning context;
- carrying out the activity;
- evaluation.

. Planning

Teachers should begin by planning the activity without making any special provisions for the visually disabled students in the group. They should then single out certain aspects of the activity that may present problems for the disabled students and make the necessary changes. Adapting an activity for the functionally sighted generally requires fewer changes than adapting it for the functionally blind.

Teachers should consider the following two questions when they prepare group activities. The examples that follow the questions are meant to help in adapting either the objectives, materials, or performace of the activity.

First question: HOW SUITABLE ARE THE OBJECTIVES OF THIS LEARNING ACTIVITY FOR VISUALLY DISABLED STUDENTS?

The purpose of this question is to determine whether visually disabled students are able to attain the established objectives. If the answer is "yes," the second question is asked; if the answer is "no," the teacher should decide whether other objectives might be attained by performing the same activity. Other objectives may develop when changes are made to a learning activity.

The following example involves totally blind students:

ACTIVITY Throw a ball in a given direction during a physical activity	
Objective for sighted students:	**Objective for visually disabled students:**
Eye-hand coordination	Ear-hand coordination

Second question: WHAT MODIFICATIONS WOULD ENABLE VISUALLY DISABLED STUDENTS TO ATTAIN THE OBJECTIVES?

The purpose of the question is to identify the adaptations that should be made to the activity to enable visually disabled students to participate according to their way of functioning. In most cases, changing the materials or equipment used or asking for the assistance of a sighted student in the group will be enough to enable visually disabled students to take part.

ACTIVITY Throw a ball in a given direction during a physical activity (e.g. gym class or recess)	
Modifying the Materials:	**Modifying the role of an individual:**
Place a stationary sound source such as a metronome behind the target.	A classmate strikes the target, producing a sound. The visually disabled student throws the ball in the direction of the sound. He/she is then told by the classmate whether he/she has hit the target.

. Establishing the Learning Context

This stage is usually the one which decides the success of an activity. Teachers should take all the time they need to prepare activities carefully. Instructions should be clear for visually disabled students, since they need to know what will happen and under what conditions. These instructions should include what the students are required to do, as well as a description of their surroundings and the objects that will be used during the activity. At this point, it is important that teachers put the disabled students in direct contact with objects in the environment to enable them to locate themselves in relation to the whole. Finally, to make sure that students have understood the instructions, teachers may ask them to describe their roles in the activity, and the roles of the other children.

. Carrying Out the Activity

Sometimes, although an activity is well planned and the students understand the instructions, difficulties still arise. Teachers should therefore check regularly whether the activity is proceeding according to plan by asking the students questions about what they are doing, why they are doing it in a certain way, and so on.

. Evaluation

At this stage, teachers should review the performance of the activity in order to identify which of its features facilitated the task or made it more difficult for visually disabled students. Evaluation provides the opportunity to consider improvements that might be made in future activities.

2.4 Materials

Educators know that teaching materials play a very important part in the learning process. They are not only a means of attaining the learning objectives, but also important instruments for the overall education of children. In this section, three categories of learning materials used by visually disabled students will be examined: standard materials, specialized materials, and texts.

2.4.1 STANDARD MATERIALS

Standard materials are all materials used by teachers in their classrooms that are intended for all the students in the group. At the elementary level, most ordinary classroom materials may be used by visually disabled students whether they are functionally sighted or functionally blind. However, just as materials that are dull and colourless do not appeal to sighted students, objects which have little tactile or auditive interest will not appeal to the visually disabled. They may not be interested in materials that are attractive to their sighted classmates. For materials to be effective for the visually disabled, they should be:

. Sturdy and Safe

Visually disabled students, whether functionally sighted or functionally blind, handle certain objects often to discover their significant characteristics. Consequently, these materials must be sturdy enough to withstand frequent handling and occasional shocks. Materials with moving parts must be particularly sturdy, since visually disabled students are often particularly interested in manipulating these objects.

Sturdiness is essential to the safety of materials. In addition, materials with parts that might cut or scratch the skin should be avoided unless students are carefully warned beforehand about their dangers. It must always be kept in mind that these students learn about objects through touch.

. Appealing to the Senses

To appeal to visually disabled students, materials should correspond to their way of functioning, that is, be meaningful to the sense of touch. Materials that enable students to explore the three dimensions of an object provide more complete learning experiences than two-dimensional materials. Pictures, drawings, and photographs are only useful to those who can use their residual vision. For these students, the greater the contrast in colours, the more significant the object. They particularly appreciate objects with different textures.

The physical details of an object should be distinctive. If there are too few details, the object will not have tactile appeal; if there are too many, it will be difficult to establish relationships among them. Often, details that are significant to the sense of sight are meaningless when perceived through touch only.

Finally, to be appealing, the size of materials should be suited to tactile perception. Objects that are either too small or too big may lose all their appeal since the students cannot handle them easily.

. Adaptable

Because of their shapes and bright colours, most materials used in regular classrooms hold great appeal for visually disabled students. Although they are not specifically designed for these students, these materials can easily be modified to meet their special needs. Most of the time, this is the best solution. The following are a few of the many possible ways of adapting standard materials:

- Creating contrasts in colours:[1]
  . by juxtaposing dark and light surfaces, shiny and dull surfaces, and so on;
  . by stressing outlines.

- Modifying textures[1]
  . by using different materials such as aluminium foil, cellophane, cardboard, rubber, sandpaper and various kinds of cloth;
  . by juxtaposing smooth and rough textures such as cotton wool and sandpaper.

- Adding or removing one or more elements
  . by attaching something audible such as a small bell to an object;
  . by making one little hole on red surfaces, two little holes on blue surfaces, etc.; it is also possible to etch marks, or use a strip of tape (such as "Dymotape" labels) with raised dots (braille);
  . by removing from the object certain elements that are too close together, or may in other ways be confusing to the student's sense of touch.

These are only a few examples of modifications that teachers can make themselves to the materials that they use regularly in the classroom.

When such modifications of standard materials are not sufficient to meet the needs of visually disabled students, specialized materials must be considered.

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[1] These modifications are particularly welcomed by children working with two-dimensional materials such as drawings and pictures.

2.4.2 SPECIALIZED MATERIALS

Every day visually disabled students at the elementary level use materials that are specially designed for them and their ways of functioning. Trained resource persons guide them in the use of these materials, but since teachers are responsible for making sure that students use them efficiently in the classroom, they should have some knowledge of how they work.

To begin with, teachers should keep the following points in mind:

- Not all visually disabled students need specialized materials or equipment.

- Students should not be provided with specialized materials simply because these materials have been specially designed for the visually disabled.

- A resource person (itinerant teacher, special care counsellor, a member of the professional staff at a rehabilitation centre) should always be consulted before supplying students with specialized materials or equipment.

- Rehabilitation centres provide many of the devices required by the disabled.[1]

- Students should be encouraged to make maximum use of their aids. If they forget to wear their glasses, for example, they should be reminded to put them on.

- Students should be shown how to take care of their equipment. It should always be put away in the same place when it is not in use.

If students do not use their aids when they should, teachers should ask why. If the aids are damaged or out of order, they should be repaired or replaced. It is also possible that the children have only had their equipment for a short while and still do not know completely how to use it. The resource person should be consulted whatever the reason. Students should not be provided with replacements for equipment unless the resource person has been consulted.

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[1] See "Other Educational Personnel," Section 4.

Most of the aids used by visually disabled students at the elementary level are easy to use. It is strongly suggested that teachers gain a working knowledge of these aids in order to help the students with them should the need arise. Students may ask for assistance in adjusting the closed-circuit television, for example, or in straightening out the paper in the brailler.

Other students are sure to be interested in their visually disabled classmates' use of specialized materials or equipment. Teachers should answer their questions and explain how the aids assist their disabled classmates. Teachers should also take the opportunity to tell the children that these aids are not toys and that they are the property of the visually disabled students.

The purpose of specialized materials is not to increase the speed at which the students work, but rather to assist them in the performance of certain tasks. Teachers should permit students to work at their own pace when using their technical aids.

2.4.3 TEXTS

Most of the textbooks used at the elementary level are designed to be appealing to the eye: they are extremely colourful and contain pictures which are often very detailed. Small print size or the teachers' use of photocopies may create certain problems.

- Printed Text: Functionally sighted students are usually able to use the same textbooks as their classmates. Some books, such as dictionaries, however, may present problems. If students cannot manage to read small print with a magnifying glass, eyeglasses, or closed-circuit television, they might ask someone to read the text for them. To avoid problems, however, it is better to use textbooks with large print in elementary school.

  Visually disabled students can use the regular textbooks used in the first cycle of elementary school since they contain large print. Textbooks used in the second cycle, however, are written in smaller print making their use more difficult. Teachers should try to provide visually disabled students in their classes with the large-print textbooks which they need. If this type of textbook cannot be provided, students should use enlarging aids such as closed-circuit television or a magnifying glass.

Teachers who use photocopies and stencilled worksheets should remember to give the functionally sighted students their clearest copies. If teachers draft the text themselves, they should use large lettering. However, the quality of the printing is as important as the size of letter since magnifying devices make print larger, not clearer. If the text is duplicated using a ditto machine, teachers should give visually disabled students the best copies. Another way to facilitate reading is to cover the printed text with a yellow transparency. For drawings, graphs, and geography maps, it is sometimes sufficient to darken outlines. Felt-tip pens are ideal for helping functionally sighted students practice their penmanship. Teachers may want them to develop the habit of double-spacing their writing.

Visually disabled students who cannot read print (even by using optical aids or magnifying devices) must use braille.

- Text in Braille: Braille textbooks are rare and often difficult to obtain. With the introduction of new programs at the elementary level, it may be some time before appropriate braille textbooks are available.

Teachers can solve the problem of textbooks in two ways: they can have the students use existing braille textbooks or enlist the services of a resource person to transcribe texts that are needed in the classroom into braille.

Since visually disabled students in elementary school are often in the process of learning braille, the use of cassette recordings should be avoided.

Texts in braille are arranged differently from the corresponding print texts. The text on page 83 of an ordinary book, for example, may appear on page 21 of the second volume of the same work in braille. In fact, an ordinary book transcribed into braille is usually divided into several volumes because of the space required by braille characters. Finally, illustrations and maps are usually placed together in a separate volume from the volumes containing braille text. Because of the special requirements associated with the use of braille, teachers should make arrangements to meet the special resource person at the beginning of the school year in order to record the page numbers in the braille books that correspond to those in the ordinary books.

2.5 Necessary Interventions

It is important that teachers working with visually disabled students in elementary school encourage certain behaviours and discourage others. Teachers' interventions can be decisive in ensuring that the students integrate fully into regular classes and in facilitating their quest for autonomy.

. Eliminating Symptomatic Behaviours

Symptomatic behaviours are not easily eliminated. There are no miracle solutions. An excellent way to curb this type of behaviour, however, is to keep the students busy. If the behaviour persists, teachers should make the children aware of what they are doing, and ask them to avoid it in the future. Once this has been done, teachers should speak to the students, touching them (placing a hand on their shoulders), and so on, whenever they revert to symptomatic behaviours.

It would be unrealistic to expect ingrained symptomatic behaviours to disappear in a short time. Patience, perseverance, and frequent reminders, however, usually yield good results.

. Preventing Verbalism

One of the best ways to prevent verbalism is to check the students' understanding of concepts regularly. When teachers realize that a student's concepts do not correspond to reality, they should act immediately by pointing out the error, and giving a description that is as close to reality as possible. Verbalism should not be allowed to persist. In general, occurrences of verbalism decrease with time. No occurrences, however, does not necessarily mean that students have accurate concepts of all aspects of reality. It is recommended that teachers at the elementary level check for the presence of verbalism each time new learning concepts are introduced.

. Making Maximum Use of the Senses

In elementary school, teachers should take every opportunity to motivate students to use all their senses. One way to do this is to prepare specific exercises for the purpose of developing the senses. For example, teachers may ask students to choose a specific object from among a number of objects in a bag, listen to a recording of animal or other sounds, identify various products by smelling them, and so on. Since teachers may not always have enough time to organize these special activities, they should also increase

students' awareness of sounds in their environment by directing the children's attention to these sounds. They should ask frequent questions such as "What do you smell?" "What do you hear?" and "Is what you are touching soft?" These questions awaken the children's senses and prompt them to explore significant sensory clues in their environment.

. Encouraging Mobility

The ability to get about with ease, as early as possible, is a basic need for visually disabled students. Teachers at the elementary level can contribute to the development of this ability by encouraging activities that require the children to go from one place to another, and by making these movements as easy as possible. This can be achieved:

- by providing visually disabled students with reasons and opportunities for moving about; for example: "Go and get your sweater in your locker"; "Please bring me your work"; "Would you put this book away in the cupboard?";

- by pointing out obstacles along frequently used paths to students to help them overcome the anxiety of moving about; for example: a pillar in an open area, the arrangement of tables and chairs, and so on;

- by stressing caution and by encouraging these students to investigate things that might hinder them when they move about; for example: if there is an obstacle in their path, have them touch it; if they drop something, have them feel for its location with their feet before bending down to pick it put;

- by providing easy reference points such as doors, drinking fountains, blackboards, lockers, sinks; for example: the washroom is where there are two doors side by side, the wastepaper basket is just a little to the left of the door, and so on;

- by urging them to make use of all their senses when they are moving about;

- by encouraging them to ask to be accompanied when necessary.

. Getting About in the School Environment

It is essential that visually disabled students become acquainted with their surroundings. Helping them to do so is one of the teacher's first tasks at the beginning of the school year.

Educators charged with this task should give the students an accurate description of all the areas in which they circulate (classroom, halls, gymnasium, washrooms, stairs, library, and so on) and the routes to take to go from one place to another. They should also help the students to recognize reliable reference points that will help them in moving from one place to another. At first, students should always be accompanied by an adult. Once they are familiar with their surroundings, they may be left on their own and simply followed from a distance to make sure they remember the directions that were given them. Once the students have shown they can move about safely, they may do so on their own.

Showing these students around the school yields good results if it is repeated every day. Two or three weeks should be sufficient for new students to learn how to find their way around the school. If more time is required, however, it should be provided. Students who attended the school in the past will probably only need reminders.

Just as visually disabled students should know the general layout of the school, it is also important that they become well acquainted with the layouts of their classrooms as early as possible. During the first days at school, teachers should show them where the furniture and equipment are located.

These students should also know where their friends are seated in the classroom. Teachers may help them with this through a special activity during the first two weeks of the school year. Every day, at the beginning of English class, for example, each student in turn, sitting at his/her desk, says aloud an identifying characteristic about himself/herself. On the first day, for instance, they might state their name and age, on the second day, they may add one or two physical features to their names, and so on. After a time, the visually disabled students (especially those who are functionally blind) will be able to associate the voice, name, and the assigned seat in the classroom for each one of their classmates.

The following suggestions concerning order, safety, and the use of fixed reference points should help students learn to get their bearings and move about more easily:

- Order: When visually disabled students are using facilities, disorder cannot be tolerated.
  . Each object (materials and furniture) should have a definite, agreed-upon place and position.

. Visually disabled students should be told where objects are located and how they are positioned.
. Materials and furniture should always be put back in place when not in use.

The presence of visually disabled students in the classroom does not preclude any changes in the arrangement of materials or equipment. On the contrary, such changes should help these students develop the ability to memorize the locations of objects. It is essential, however, that visually disabled students be informed of these changes as soon as they are made.

It is also very important that visually disabled students form the habit of being orderly as early as possible. Elementary school is an excellent time for them to learn this habit. This aspect of the children's education should be stressed daily.

For the children to acquire the habit of orderliness, two important points should be stressed. First, they should organize objects in their immediate surroundings in a way that is convenient for them. For example, they should place their materials in such a way that they are easily accessible, keep more frequently used objects within easy reach, always put things in the same place, put away their textbooks in the same order, and so on. Second, children should learn to do things systematically, for example, organize their time, choose priorities and perform tasks in ways that are the most efficient for them.

Teachers should frequently repeat advice that will help and encourage students to do their best to keep their things in order. At the end of the day, for example, students should be asked to check that all their materials have been put back in the right place.

- Safety: The best ways to make the students' physical environment safe are to have them explore their surroundings and show them useful points of reference, and to teach them orderliness. Although unforeseen events can happen, dangerous situations can usually be avoided by remembering the following:
  . never leave doors ajar;
  . keep regularly used paths clear of obstacles;
  . do not permit students to explore unfamiliar areas on their own;
  . make students aware, through touch, of the physical arrangement of areas in which they work and play;

. teach students to keep their hands in front of them when they move about;
. teach students to keep to the right in hallways, a few inches from the wall;
. teach students to hold on to the railing when going up or coming down the stairs;
. teach students the habit of setting objects down carefully after having decided by touch where they wish to place them.

- Reference points: Visually disabled children often have to move closer to objects or the centre of activity in order to obtain a better view or to explore by touch. The perception range of the functionally blind is limited to the reach of their outstretched arms and hands. It is therefore important for students to be able to easily locate and reach for objects which they need for performing tasks that are asked of them. In order for students to locate their belongings in the classroom, it is preferable that they have fixed reference points.

. Planning School Time

In elementary school, visually disabled students' ways of functioning and learning, their use of specialized materials, and their methods of getting about all result in their needing more time than their sighted classmates in order to perform certain tasks and assimilate knowledge. It is important to keep this in mind when planning the schooling of visually disabled students. Since the number of minutes spent at school is the same for all students, time management is a major challenge when working with disabled students.

The time that they spend in school can be best used in the following ways:

- When a teacher schedules an activity which requires the students to use their residual vision, it should be followed by an activity that does not involve visual concentration. In this way, visual concentration and relaxation are alternated, and the children avoid becoming overly tired.

- Before an activity begins, teachers should tell the students which materials will be needed for the activity so that no time is lost.

- In cases where exercises are needed in order to assimilate subject matter teachers should assign fewer to these students; quality is more important for them than quantity. For example, if five operations are sufficient to acquire a concept, these children should not be required to do more.

- Teachers should place more emphasis on homework and enlist the parents' cooperation in helping the children finish work begun at school.

- Teachers should encourage the students to work in small groups and insist that each one do his/her share.

- If students need to learn to use technical aids (braille, brailler, closed-circuit television, etc.), the teacher should arrange a meeting for the children with a resource person who can help them in their learning activities and show them how to use their technical aids.

When teachers give visually disabled students individual instruction, they should guard against an overprotective attitude, which could be detrimental to their development.

. Participating in Group Activities

There are some activities in elementary school in which visually disabled students cannot take part to the same extent as the other students. This does not mean that they should be left out of the group. Teachers should include them in the group activity and assign them appropriate roles or responsibilities. Teachers should be careful not to give these students roles in the activity which they cannot fulfill because of their disability. Classmates might reject them and refuse to include them in other activities. One way to facilitate a visually disabled student's participation in activities is to team him/her with a classmate for the performance of a particular task.

2.6 Suggestions

Teachers often have many questions when they have visually disabled students in their classes, for example, terms to use when speaking to them, activities in which they are able to participate, and so on. Many of these questions have been answered in the preceding chapters. The following are a few additional suggestions. Teachers should:

- assign visually disabled students well-lit places in the classroom. If they are photophobic, however, they should not be seated close to windows;

- seat visually disabled students close to the centre of activity where they can use their residual vision;

- take care not to obstruct a student's light source;

- always indicate their location to the students;

- avoid remaining silent for long periods of time;

- use precise language;

- avoid using certain terms, such as "over there, this, that" and so on. These terms are meaningless to students who cannot see what is going on at the time. For example, "I take this and I put it over there. Then, I take that one off and replace it with this one," and so on. Such sentences hold very little meaning for the visually disabled;

- not be afraid to use terms that are related to vision such as "Look carefully," "I'll show you," and so on. Students understand that they mean "I'd like you to become aware of...";

- avoid the use of terms that have figurative meanings if students do not fully understand the sense of the word;

- write in large, well-spaced letters and read the text aloud as they are writing it on the blackboard;

- allow students to leave their seats to see what is written on the blackboard or posted in the classroom;

- answer questions other children in the group might have concerning their visually disabled classmates.

2.7 Activities

2.7.1 COMPLEMENTARY ACTIVITIES

Complementary activities are school activities that are not directly related to the curriculum. It is extremely important to pay particular attention to these activities because they can sometimes impede the visually disabled students' integration into the regular class. The students may succeed very well in English, for example, or in mathematics, but have so many problems outside the classroom setting that their schooling within the regular education system is jeopardized.

If these complementary activities are given the attention they deserve, however, not only can they ease the visually disabled students' integration into a regular class, but also provide important opportunities to acquire essential knowledge and skills.

. Arriving and Leaving

When children arrive at and leave school, there is often a great deal of disorganization and commotion. Since visually disabled students need very well organized surroundings, they may have problems and require special assistance.

Teachers should begin by making sure that visually disabled students are thoroughly acquainted with the arrival and departure areas. They should show these children where to go when they arrive at school. If they arrive by school bus, the teacher should ask the driver to stay until he/she is sure that the students have reached the school door. Teachers should require that students arrive and leave in an orderly fashion. They can prevent a general scurry towards the door, running, and bottlenecks by standing beside the door to supervise students in the hallway and the classroom when they come in or go out.

Teachers should then check with the parents to make sure the children who do not take the school bus know their way home. If they do not know the way, they should be referred to an orientation and mobility specialist as soon as possible. If they ride the school bus, teachers should show them where it is parked and ask the driver to make sure that these students are on the bus before leaving. Teachers should also make sure that the disabled students are able to easily identify their driver and their friends who take the same bus as they do. It is recommended, especially for the functionally blind, that they be paired with a classmate when they leave the school. At the beginning of the school year, teachers might personally escort these students to the parked bus and make sure that they board safely.

. Dressing and Undressing

Visually disabled students should be given lockers for their private use, since their materials take up more space and must be arranged in a certain order. It would be preferable for teachers to assign these students the lockers closest to the classroom door in order to ensure easy access.

As with all children, especially small ones, visually disabled students may sometimes need help to dress or, if they dress themselves, it may take them more time. Teachers may urge them to hurry, but they should let the children dress themselves if they are able. They should make sure that the children are dressed properly and that their lockers are in order.

. Recess

Visually disabled students, like other children, need to relax during recess time. They should not be allowed to stay indoors simply because it takes them longer to dress and undress than other children or because they cannot always participate in their classmates' activities.

If these students cannot join in the others' play, they should engage in a physical activity of their own. They may take a walk with a friend or play a game that is suitable for them. For example, they may throw a ball into a wastepaper basket which a playmate has struck to indicate its position.

. School Outings

School outings (visits to the museum, the zoo, factories, and so on) always benefit visually disabled students, even though they may not be allowed to touch anything. These visits are an opportunity for the children to experience things which they may have only heard about. Teachers should prepare these outings carefully so that visually disabled students can benefit fully from them. They could contact those in charge to obtain permission for the students to touch objects. Before leaving, teachers should give the children information on what they are going to see and direct the visually disabled students' attention to the most important objects. While on the outing, teachers should stay with these students in order to provide opportunities for touching (if possible), they should suggest that they approach interesting objects more closely, and finally, they should describe as accurately as possible objects or situations which may be of particular interest to these students.

. Integration

The attention given visually disabled students during complementary activities should help them feel comfortable and facilitate their integration into regular classes. These activities provide the students with the social experience essential to their education. They feel accepted by those around them and begin to think of fulfilling their potential. This kind of encouragement should help them tackle their school work with renewed self-confidence.

2.7.2 PROGRAM-RELATED ACTIVITIES

Visually disabled students at the elementary level are taught the same programs as the other children. Since it is possible for them to attain the objectives of the regular curriculum, no special programs have been designed for them. Still, difficulties may arise and programs may need to be adapted. Above all, teachers must endeavour to adapt their teaching in such a way as to enable students to attain the objectives set forth in the programs.

In this section, each program at the elementary level is examined in order to identify the features which could be of particular benefit for visually disabled students, to indicate difficulties that may arise, and finally, to suggest ideas which may enable students to overcome these difficulties.

. English Language Arts

The elementary English Language Arts programs provide visually disabled students with a window on the world. The many varied activities that are suggested integrate all the language arts and may be used by teachers in ways which enable disabled students to learn more about their environment.

The approach to language learning advocated in the Language Arts programs does not present major difficulties for visually disabled students. In the area of oral communications, problems are virtually nonexistent if appropriate materials and activities are developed. For example, functionally sighted students could describe a drawing orally, but functionally blind students could not. Both the functionally sighted and the functionally blind, however, can describe a television program; the latter obtain their information from the audio.

Major difficulties may be encountered in the area of written communications. In general, visually disabled students do not experience more difficulty than their sighted peers in integrating the elements of language (vocabulary, morphology, syntax, and so on). They may, however, assimilate this knowledge at a slower pace, since it takes them longer to read and write. For the visually disabled students, this slower pace, along with an incomplete knowledge of the environment, may give rise to difficulties in understanding the written word. These problems are more apparent in the second cycle of elementary school when students have more difficult texts to read. The only solution to the problem is to have them read the text two or three times in sequence. For learning to read and write, all teaching methods are suitable for the functionally sighted students, especially if they have the optical devices which they need.

The situation is totally different, however, for functionally blind students, since learning to read and write in braille involves the sense of touch and is analytical. Sighted students, on the other hand, are able to take an overall approach to the form and context of written words. Teachers of regular classes should work closely with the specialist responsible for teaching braille to functionally blind students, especially during the first year of elementary school.

Finally, materials used to attain certain objectives in the program may present some problems. For instance, difficulties may arise if newspapers are used because of the small size of the print. Visually disabled students should be provided with learning materials written in larger print. Teachers may also wish to look into using other materials, such as audiocassette tapes, with functionally blind students in their classes.

Although the visually disabled students' pace of reading and writing generally remains slower than that of sighted students, it is possible for them to attain the objectives of the English Language Arts program by the end of elementary school.

. French

For visually disabled students the French Second Language program should not cause any more difficulty than English Language Arts. In fact, because of the greater emphasis on oral participation, there may be fewer problems encountered. For the functionally sighted students, difficulties that may arise in reading, writing, or responding to visual stimuli will be about the same as those encountered in English Language Arts. The functionally blind students will have to learn new meanings for a few braille signs that are different in French. However, they will not need to relearn the use of the braille system. Since French braille abbreviations are not introduced before secondary school, students must use the uncontracted braille. As a result, they will need more time to do their assignments. By proceeding in the same manner as for English Language Arts, it should be possible for visually disabled students to attain the objectives of the French program by the end of elementary school.

. Mathematics

The Mathematics program at the elementary level contributes greatly to the students' acquisition of the concept of space. Objectives that pertain to geometry and measurement are particularly useful in helping visually disabled students form mental images that are closer to reality. For example, learning the simple concepts of parallel lines, squares, cubes and circles will facilitate their getting about, since these principles of geometry can be applied to their environment (e.g. hall walls are parallel, sidewalks form a quarter circle at the corner of the street, and the classroom is shaped like a cube). These concepts may seem obvious to sighted people, but they are of major importance to the visually disabled.

Many examples could be given to illustrate the importance of mathematics in getting about for those who cannot see. One example involves a game that everyone has played at one time or another. A blindfolded person is directed through an obstacle course by simple verbal instructions. For example, "take three small steps forward," "turn 45 degrees," and so on. The person is thus directed along a particular route. The visually disabled do not necessarily count their steps, but they use mathematical concepts to move about.

At the end of elementary school, functionally sighted students should have attained all the objectives set out in the Mathematics program if they can use the appropriate written materials. Their greatest difficulties usually involve the size of the print and geometrical figures that are too detailed. When these problems arise, functionally sighted students should use optical devices that magnify print or large-print books.

Functionally blind students may also be able to attain the objectives of the Mathematics program by the end of elementary school, but they will have to overcome greater difficulties. They must use special materials for computations (Taylor slate and prisms, abacus), and they must make skillful use of their sense of touch to identify raised geometry figures and make measurements with rulers and protractors. They will also have to show a great deal of imagination in order to apply the concepts they have learned to reality. For example, comparing the classroom to a cube is an analogy that is easy for the sighted to grasp, but it is much more difficult for the blind who must make the analogy in their imaginations.

To guide visually disabled in their learning of mathematics, it is essential that teachers proceed slowly, provide instruments appropriate to their way of functioning, and review previously acquired concepts frequently. Finally, teachers should consult the specialized resource person regularly

. Natural Science

The Natural Science program provides opportunities for visually disabled students to increase their knowledge of the physical environment. The program itself is an excellent source of new information which might not otherwise be available to these students. Due to their lack of visual experience, some visually disabled students do not know that certain objects exist or have an image of them that does not correspond to reality despite the fact that they encounter these objects in their environment every day. The objectives of the Natural Science program are as relevant for visually disabled students as for other students. To attain these objectives, however, visually disabled students must use all the means (sensory compensation, getting about, technical aids, and so on) which they already have or which can be provided.

Teaching materials suited to these students' way of functioning and the principle of making learning experiences concrete should be used. Illustrations (photographs, pictures, drawings, and so on) are not sufficient. Teachers must relate them to actual three-dimensional objects, perhaps by bringing in the actual object (plant, flower, cat, dog, rabbit, rock, part of a flower) for the children to touch. If possible, trips outside the school should also be organized (e.g. farm, zoo, botanical gardens).

Large parts of the subject matter can be taught orally, with the students memorizing characteristics of the environment. However, this method should be used with caution. Oral descriptions should be used to complement and enrich knowledge of objects in the environment, not to replace the children's actual contact with their environment.

. Social Studies

The Social Studies program is the most difficult for visually disabled students at the elementary level. The main problem is that many objectives are formulated using phrases, such as "Using pictures and various personal experiences..." which presuppose a specific learning technique.

Nevertheless teachers may find this method appropriate for functionally sighted students provided they pay special attention to the materials that are used. Materials that are primarily visual (photographs, maps, graphics,

and so on) should be clear and easy to read. Students should be able to look closely at illustrations. They should be clear, without superfluous details, and have sharp contrasts. Learning material should be complemented with exploration in the real world. If teachers provide their functionally sighted students with materials that are appropriate to their way of functioning, and keep in mind that they require more time to benefit fully from learning situations, these students can successfully attain the objectives of the Social Studies program by the end of the elementary level.

Functionally blind students, however, may not be able to attain certain objectives of the program. By adjusting the wording of the objective to suit the students' way of functioning, however, teachers may enable them to proceed like the other children. For example, "Using illustrations..." can be changed to "Using objects..." In spite of such changes, large sections of the program cannot be made accessible to them in the same way as they are to their sighted classmates. The functionally blind must, for example, use scale models, raised graphics, and relief maps and globes. These are necessarily less detailed than those normally used, and all the information must be written in braille. Teachers can make subject matter more accessible to these students by accompanying these materials with oral descriptions using simple, accurate terms with attention to detail.

An excellent way to teach the visually disabled to tell the time is to provide clocks with hands they can move themselves. There are toys on the market well suited to their needs. The only modification that needs to be made is to add braille numbers.

Visually disabled students can learn to recognize coins by their size. They cannot, however, recognize the value of paper money through touch only. They have to memorize the number of bills in their possession, the value of each, and the order in which they are placed.

At the end of elementary school, functionally blind students may not have attained all the objectives of the Social Studies program. If, however, adequate materials are provided, plenty of oral description is given, and sufficient time is allowed for the integration with their classmates, these students can attain a high level of performance.

. Physical Education

There may be a tendency to consider Physical Education to be inaccessible to visually disabled students because of the motor skills required by this subject. Just the opposite is true. Physical Education should be considered as an important subject for these students even though they may not be able to participate in all group activities. They still enjoy and need physical activity, and should not be deprived of it.

All the Physical Education objectives at the elementary level can be attained by visually disabled students. Difficulties may arise, however, with the choice of activities to attain these objectives. Generally, the degree of difficulty varies according to the degree of residual vision present. It is easier for functionally sighted students to participate in their classmates' activities than it is for the functionally blind.

The two main difficulties that may arise in striving to attain the objectives of the Physical Education program are the performance level of visually disabled students and their participation in group activities. Since the objectives do not specify performance levels, they are completely applicable to the visually disabled. However, because getting about is one of their greatest challenges, these students will probably not achieve as high performance levels as sighted students. The visually disabled will be generally less skillful than the sighted in activities where a ball (or other objects) must be caught or thrown, and in exercises that require moving around. This will be even more obvious when activities intended to attain objectives are done in groups. Because of their disability, students cannot see their teammates' movements or the trajectory of the object used for the activity. In this type of situation, they are at a disadvantage in relation to the other students since they have very little time to react.

Certain measures may contribute to decreasing these difficulties. For example, a small bell can be attached to materials (balls, targets, and so on). Children will thus be able follow the trajectory of a rolling ball and find the location of a target in relation to themselves. This is one way of increasing the likelihood of these children attaining a better level of performance.

For team activities, a visually disabled student should be paired with a sighted student if possible. If, for safety reasons, team participation is impossible, these students can be assigned the role of referee or scorekeeper, for example. If no role can be found for them, they should be taken out of the game and assigned another activity.

Certain activities carried out individually require the presence of a schoolmate in order to enable the visually disabled student to participate fully. For example, a student without sufficient residual vision to get about alone will have to run with his/her hand on a schoolmate's shoulder. If visually disabled students use gym equipment (e.g. trampolines, balancing beams, stall bars), the teacher (or another adult) should be there to supervise.

Finally, Physical Education is essential for visually disabled students since it provides them with the opportunity to practice many exercises which will help them get about independently.

. Art

The four arts programs at the elementary level (Visual Art, Music, Drama, and Dance) take on a whole new meaning for visually disabled students. Since their physical activities are limited, they can develop skills and talents in the arts which may lead them to discover a means of expression that corresponds to their tastes and their strengths.

- Visual Art:[1] If functionally sighted students are allowed to proceed at their own pace, they can attain the same objectives of the Visual Art program as their sighted classmates. They may require more time, however, to master techniques and produce quality work. In drawing, cutting out, and colouring exercises, for example, they must proceed slowly to achieve precision, since they cannot view their work in one glance.

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[1] Translator's note: the "Visual Art" program includes art which has tactile appeal, and is therefore accessible even to functionally blind students.

Functionally blind students can and should produce work in two dimensions. They cannot achieve the same level of performance as their sighted classmates, but they definitely develop important skills by doing this type of exercise.

To enable visually disabled students to remain within the lines when colouring, teachers can put adhesive tape around the areas to be coloured. For drawing, a drawing board may be made by fastening ordinary window screening to a wooden board and placing a sheet of paper on top of the screen. Drawing on the paper produces a relief effect. When they work with crayons, they can feel the forms they are colouring by touching them. Specialized materials for embossed drawing exist, but they are difficult to use. A resource person should be consulted if these specialized materials are to be used.

For functionally blind students, the emphasis should be placed on three-dimensional art. They may, for example, use plasticine, clay, papier-mâché, cardboard, and string as materials for their projects. They can use all the instruments normally used in Visual Art (such as scissors, knives, brushes, needles, and pliers), but teachers should take the time to show them how to use these materials properly and warn them of the possible dangers. Because of the wide variety of materials used, teachers should make sure that visually disabled students can easily find what they need for each project.

- Music: It is a commonly held belief that the visually disabled learn music easily. In reality, the visually disabled usually have to work just as hard as others (if not harder) to become good musicians. However, music is an art which is easy for them to appreciate since perfect vision is not required to enjoy it.

The only difficulty which may arise in the Music program at the elementary level is related to written materials. Functionally sighted students can read music quite easily; functionally blind students have to use braille musical notes and symbols. Teachers will probably have supply problems since braille music scores are rare. A specialist would be needed to teach the student to read music written in braille.

- Dance: Functionally sighted students can attain the Dance program objectives, though they may be less graceful than sighted students in doing certain movements.

  Functionally blind students will need precise instructions in order to execute dance steps, especially if they must perform individually, since they cannot rely on visual imitation. In order for these students to benefit from the program, teachers should intervene directly to show them the movements to be carried out. To show students how to pivot, for example, or how to move along following a certain predetermined series of steps, teachers may need to guide the movements of the child's body.

- Drama: Some objectives of the Drama program may be difficult to attain by both functionally blind and functionally sighted students. This is the case, for example, when students must be taught the graceful movements and actions required in certain areas of drama. This should not stop the functionally sighted students from progressing towards the attainment of these objectives. It is important to define the performance level that they can attain by taking into account their ways of functioning. These represent potential difficulties and not impossibilities.

  For functionally blind students, matters related to expression through gestures place them in a one-way situation. They may learn to express themselves through gestures, but it is impossible for them to interpret other people's gestures. Despite this, these students should not be exempted from the Drama program. All that is needed is to put more emphasis on the objectives related to artistic forms language.

. Personal and Social Education

Visually disabled children must learn to live in a society in which sight plays an important role, and they are quick to realize that they have to adopt special strategies if they are to make a place in the sun for themselves. People around them react to them in ways that are based on preconceived notions about blindness. By overcoming such obstacles the visually disabled can, nonetheless, integrate into society and participate in its evolution. The Personal and Social Education program can help visually disabled students attain this objective by providing them with the means to develop their personalities and become useful members of society.

. Moral and Religious Instruction/Education

- Moral Education: The purpose of Moral Education is to promote the full development of the human individual who, as he/she seeks individual and collective good, learns to become increasingly responsible. Students are encouraged to reflect both before and after they act, in order to evaluate their actions in terms of their personal code of ethics.

- Protestant Moral and Religious Education: It is important that children develop a sense of responsibility towards others and acquire a better knowledge of the Bible in order:
  . to develop their personalities to the fullest,
  . to develop their faculty for critical thought,
  . to respect the religious and philosophical convictions of their peers,
  . to seek truth in every area of human experience.

- Catholic Religious and Moral Instruction: The purpose of Catholic Religious and Moral Education is:
  . to enable young people to develop their sense of wonder, communion and commitment and their ability to get in touch with themselves by helping them see Jesus as a friend and guide of all Christians;
  . to help young people experience and learn about life in terms of Gospel values and by suggesting activities relevant to their personal and social lives; the expression of their faith will give new meaning and dynamism to their lives;
  . to promote the spiritual and human growth of young people while respecting their personal and individual approach to life.

3. EVALUATION

3.1 Evaluating Scholastic Performance

3.2 Evaluating Ways of Functioning

- Summative Evaluation
- Formative Evaluation

At the elementary level, in addition to evaluating the scholastic progress of visually disabled students, teachers must assess the progress these students make in their ways of functioning.

3.1 Evaluating Scholastic Performance

Visually disabled students who are taught the same programs as other students should be evaluated according to the evaluation model recommended in the programs. However, these students must do things differently from sighted students, and teachers have to take their ways of functioning into account. Teachers should check whether students have attained the objectives of the programs and mark students according to their performance. One way of checking whether an objective has been attained involves asking the students questions which can be answered in a drawing. This method of evaluation, obviously, would not suit the functionally blind students' way of functioning. The teacher can determine whether the objective has been reached, however, by replacing the drawing with a short descriptive text.

Generally, measurement instruments are the cause of most difficulties in evaluating the scholastic performance of visually disabled students. These instruments, designed for sighted students, often do not suit visually disabled students and must therefore be adapted. In most cases, all that is needed are small changes that teachers can make themselves. When in doubt, however, they should consult the specialized resource person. Finally, visually disabled students should not be given evaluations which do not correspond to their actual scholastic achievements.

3.2 Evaluating Ways of Functioning

A visually disabled student's way of functioning is evaluated in two ways: diagnostic evaluation done at the beginning of the school year and ongoing evaluation throughout the year.

. Summative Evaluation

Every year, during the first weeks of school, teachers should undertake a summative evaluation of their visually disabled students in order to become well acquainted with these students, particularly with their acquired skills. The assessment should deal with the children's ways of functioning, for example, the way they use their other senses to compensate for their visual

disability and their ability to get about in an unfamiliar setting. This type of evaluation is very specific and generally indicates those areas where teachers will need to take special action.

Evaluation is not a value judgement. It should be considered as an observation to which teachers add information gathered from parents and specialized institutions that have worked with the children.[1] Summative evaluation indicates the level of development attained by the visually disabled students. This evaluation is the first phase in the ongoing process of formative evaluation which is continued at least until first year of secondary school.

. Formative Evaluation

In formative evaluation, two components must be taken into account: performance and competence.

Performance is always related to the attainment of an objective. Teachers should regularly evaluate the students' skills while checking whether they have reached the desired goal.

Example: "To identify through touch raised squares on sheets of paper." Students may be able to identify small squares, but be unable to identify big squares.

It is very important to evaluate these students' performance, because they should be able to achieve the same results as sighted students, even though the means they use are often different. In order to make a place for themselves in society, they must learn to compete with people who can see. They will then be appreciated for what they can do rather than how they do it.

Competence, on the other hand, mainly involves the way in which a task is performed. Teachers should therefore take great care in the evaluation of visually disabled students since their competence is directly linked to their ways of functioning. They should evaluate whether students are making appropriate use of their potential. Teachers should give special consideration to the compensating role of the other senses, and of orientation and mobility training.

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[1] Québec, ministère de l'Éducation, **Formula for Aiding Pupils with Difficulties: Balanced Assessment Profile and Plan of Action**, Code 16-7516A-01 (Québec: ministère de l'Éducation, 1984).

Example: What senses do the children use in their performance of tasks? Do they use their sense of touch in an effective manner? Do they make appropriate use of their sense of hearing for getting about?

Whatever means are used by teachers to evaluate visually disabled students (observation, chart, test), it is recommended that evaluation be extended to the family setting, since students develop in the home environment as well as in the classroom.

4. OTHER EDUCATIONAL PERSONNEL

4.1 Cooperation with Other Educational Personnel

4.2 Means of Enlisting Aid

As the preceding chapters show, the work done with visually disabled students is of fundamental importance to them in their efforts to develop autonomy. Regular classroom teachers are not the only ones involved in the education of visually disabled students. They need to call upon the input of all those who may be involved, directly or indirectly, in the learning process of visually disabled students.

4.1 Cooperation with Other Educational Personnel

Teachers can call on the co-operation of:

- parents: As those most concerned with their children's education, parents are the principal source of information about these students. They are often in the best position to continue the work begun by the teacher. Parents should be encouraged to take an active role in school activities;

- other children: As partners of visually disabled students during activities, classmates can be of invaluable assistance. They provide disabled children with the opportunity to adapt to a group of children their own age;

- school administration: As those responsible for the application of the **Regulation**[1] in the school, administrative personnel can make an important contribution by providing teachers with the means necessary to make these students autonomous;

- non-teaching personnel: Depending on their needs, teachers may enlist the services of non-teaching personnel employed by their school boards or other agencies in the area, whether it be for specific evaluations (psychologist, nurse) or advice (special care counsellor, consultant, psychomotor specialist, and so on);

- specialized centres: As part of the Social Affairs network, visual A.M.E.O. (Aides mécaniques, électroniques, optiques) rehabilitation centres provide the public with specialized services: low-vision service, orientation and mobility training, preschool education, and functional communication. **L'Institut Nazareth et Louis-Braille** in Longueuil and the **Centre Louis-Hébert** in Québec City serve the francophone community. The **Montréal Association for the Blind**, located in Montréal, serves the anglophone community.

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[1] Québec, ministère de l'Éducation, **Regulation Respecting the Basis of Elementary School and Preschool Organization**, Code 16-0063-01A (Québec: ministère de l'Éducation, 1983).

4.2 Means of Enlisting Aid

There are a number of means at the teachers' disposal to enlist the services of other educators: the telephone, meetings, consultations, teamwork, and so on. Teachers should use the means that suit them best and develop a system of cooperation with groups whose assistance is needed.

The following are a few examples:

- Parents' cooperation:
  . establish a system of monthly telephone calls in order to discuss the child's overall development;
  . send parents a report every two weeks on certain aspects of the child's development and inform them of what work is planned for the next two weeks to ensure continuity at home;
  . invite the parents to attend the child's classes for half a day;
  . invite the parents to meetings with educators;
  . visit the child at home on a professional development day.

- Cooperation of the other children:
  . make a list of playmates and change it every week.

Whatever types of participation teachers develop, or whatever means they choose to use, they should seek the cooperation of those who can provide the best assistance as soon as it is needed.

CONCLUSION

Elementary school is the best time for visually disabled students to develop their personal ways of functioning. As this document has attempted to show, the guidance which the children do or do not receive from their teachers and other educators may have a great bearing on their future.

Teachers who have visually disabled children in their group should accept their ways of functioning, ways which are fundamentally different from those of other children. This acceptance is the first requirement for teachers who wish to fulfil their roles as educators of these children.

The information and suggestions contained in this curriculum guide will have achieved their purpose if they motivate educators to reflect on the difficulties inherent in the situation of young visually disabled children and to take positive action to improve the lot of these students.

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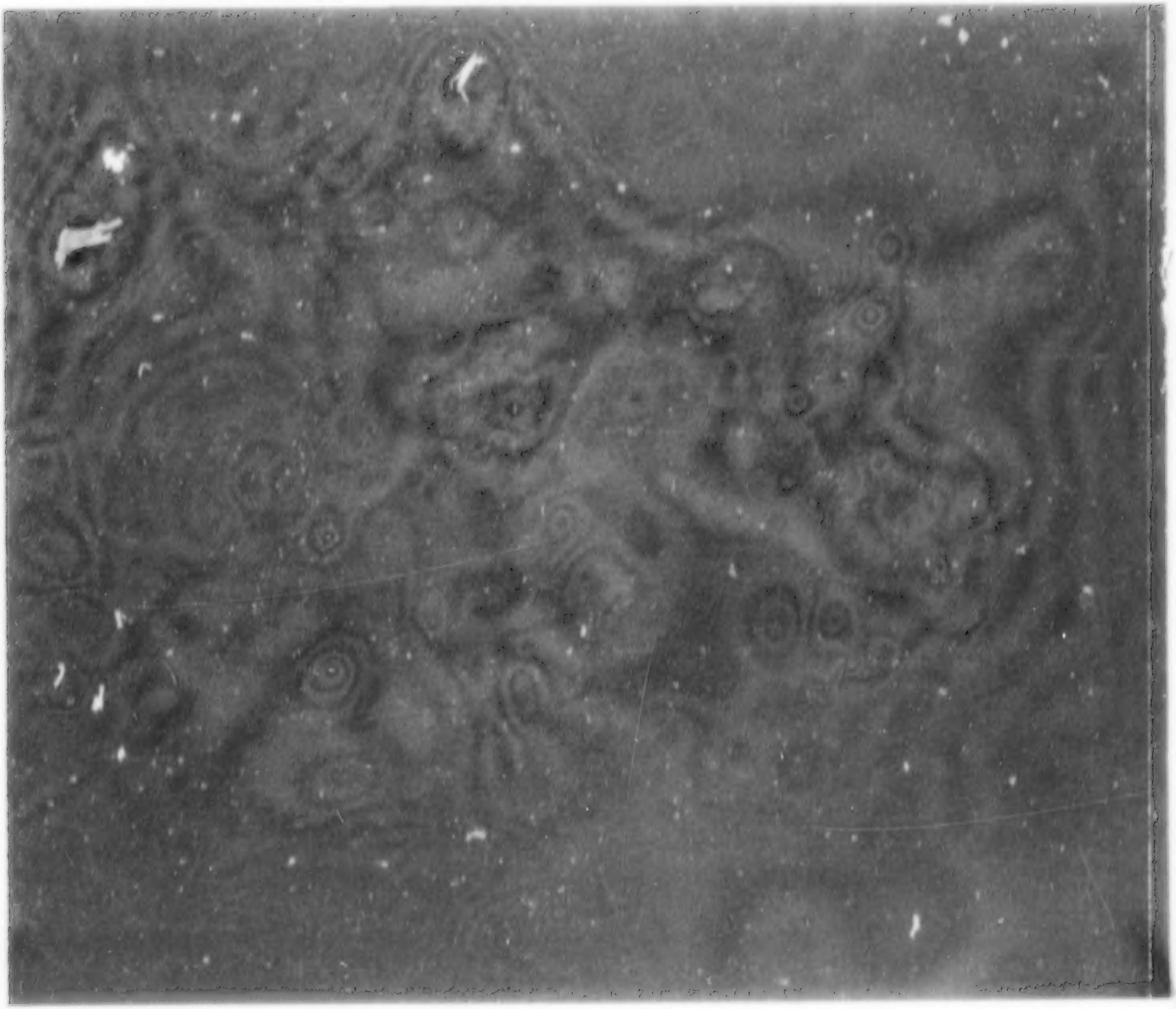

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